

CLAIMS

WHAT IS CLAIMED IS:

1. An electronic component package comprising:
a substrate comprising:
5 a first surface;
 a second surface;
 a side; and
 a ground shield extending from said first
surface to said second surface and adjacent said
10 side; and
 an electronic component coupled to said first
surface.
2. The electronic component package of Claim 1
15 wherein said ground shield comprises a plurality of
electrically conductive ground vias.
3. The electronic component package of Claim 2
wherein said ground vias are space sufficiently close to
20 one another to prevent radiation from passing between said
ground vias.
4. The electronic component package of Claim 1
wherein said ground shield extends around a periphery of
25 said substrate.
5. The electronic component package of Claim 1
further comprising a shield ring coupled to said first
surface of said substrate, said shield ring defining a
30 central region of said first surface of said substrate,
said electronic component being coupled to said central
region.

6. The electronic component package of Claim 5 wherein said shield ring comprises upper ground traces.

7. The electronic component package of Claim 6 wherein said upper ground traces are adjacent said side of said substrate.

8. The electronic component package of Claim 6 further comprising a shield electrically coupled to said shield ring, said shield enclosing said electronic component.

9. The electronic component package of Claim 8 wherein said shield comprises a shield connection surface, said electronic component package further comprising an electrically conductive adhesive coupling said shield connection surface to said shield ring.

10. An electronic component package comprising:
a substrate comprising a first surface comprising a central region defined by a shield ring;
a shield electrically coupled to said shield ring, said shield being continuous; and
an electronic component coupled to said central region.

11. The electronic component package of Claim 10 wherein said shield comprises a shield connection surface, said shield ring corresponding in shape to said shield connection surface.

12. The electronic component package of Claim 11 wherein said shield connection surface comprises a rectangular annulus.

13. An electronic component package comprising:
a substrate having a first surface;
an electronic component coupled to said first
5 surface;
a shield enclosing said electronic component, said
shield shielding said electronic component from radiation;
an antenna; and
a dielectric cap interposed between said shield and
10 said antenna, said shield being a ground plane for said
antenna.

14. The electronic component package of Claim 13
further comprising a shield ring coupled to said first
15 surface of said substrate, said shield ring defining a
central region of said first surface of said substrate,
said electronic component being coupled to said central
region.

20 15. The electronic component package of Claim 14
wherein said shield is electrically coupled to said shield
ring.

16. The electronic component package of Claim 13
25 further comprising:
an antenna trace coupled to said first surface of
said substrate, wherein a bond pad of said electronic
component is electrically coupled to said antenna trace;
and
30 an antenna strap electrically coupling said antenna
to said antenna trace.

17. The electronic component package of Claim 16 wherein said antenna strap is electrically coupled to said antenna trace by an electrically conductive adhesive.

5 18. The electronic component package of Claim 17 wherein said electrically conductive adhesive is selected from the group consisting of epoxy adhesive and solder.

10 19. The electronic component package of Claim 16 wherein said antenna strap comprises:
an antenna section electrically coupled to said antenna;
a foot electrically coupled to said antenna trace;
and
15 a sidewall section electrically coupled to said antenna section and to said foot.

20 20. The electronic component package of Claim 19 wherein said foot is perpendicular to said sidewall section.

21. The electronic component package of Claim 13 wherein said dielectric cap comprises a first surface and a second surface, said shield being coupled to said first
25 surface of said dielectric cap, said antenna being coupled to said second surface of said dielectric cap.

22. The electronic component package of Claim 13 wherein said shield is embedded within said dielectric
30 cap.

23. The electronic component package of Claim 13 wherein said antenna is embedded within said dielectric cap.

24. An electronic component package comprising:
a substrate comprising a first surface;
a first shield ring defining a first central region
5 of said first surface of said substrate;
a second shield ring defining a second central region
of said first surface of said substrate;
a first electronic component coupled to said first
central region;
10 a second electronic component coupled to said second
central region;
a first shield enclosing said first electronic
component, said first shield being electrically coupled to
said first shield ring; and
15 a second shield enclosing said second electronic
component, said second shield being electrically coupled
to said second shield ring.

25. The electronic component package of Claim 24
20 wherein said first electronic component is shielded from
said second electronic component by said first shield and
said second shield.

26. The electronic component package of Claim 24
25 wherein said first shield is grounded separately from said
second shield.

27. The electronic component package of Claim 24
wherein said first shield and said second shield are
30 commonly grounded.

28. The electronic component package of Claim 27
wherein said first shield is electrically coupled to said
second shield.

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29. The electronic component package of Claim 24 wherein said first shield ring and said second shield ring share a common side. (

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30. An electronic component package comprising:
a substrate comprising a means for defining a central region of a first surface of said substrate;
means for coupling an electronic component to said
10 central region;
means for shielding said electronic component; and
means for transmitting and receiving radiation,
wherein said means for shielding forms a ground plane for said means for transmitting and receiving radiation.

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31. A method comprising:
forming a shield ring on a first surface of a substrate, said shield ring defining a central region of said first surface;
20 coupling an electronic component to said central region;
forming a dielectric cap;
coupling a shield to said dielectric cap; and
coupling said shield to said shield ring.

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32. The method of Claim 31 wherein said forming a shield ring comprises forming upper ground traces on said first surface of said substrate.

30 33. The method of Claim 31 wherein said electronic component is coupled to said central region in a wirebond configuration.

34. The method of Claim 31 when the electronic component is coupled to said central region in a flip chip configuration.

5 35. The method of Claim 31 wherein said dielectric cap is formed by a plastic injection molding.

36. The method of Claim 31 wherein said shield is coupled to said dielectric cap by an adhesive.

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37. The method of Claim 31 wherein said shield is coupled to said dielectric cap by heat staking.

38. The method of Claim 31 wherein said coupling a
15 shield to said dielectric cap comprises sputtering an electrically conductive material on said dielectric cap.

39. The method of Claim 31 wherein said shield is coupled to said shield ring by an electrically conductive
20 adhesive.

40. A method comprising:
forming a shield ring on a first surface of a substrate, said shield ring defining a central region of
25 said first surface;
forming an antenna trace on said first surface of said substrate;
coupling an electronic component to said central region;
30 forming a dielectric cap;
coupling a shield to said dielectric cap;
coupling an antenna to said dielectric cap;
coupling said shield to said shield ring; and
coupling said antenna to said antenna trace.

41. The method of Claim 40 further comprising shielding said electronic component from radiation with said shield.

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42. The method of Claim 41 wherein said shield is a ground plane for said antenna.